

WHAT IS CLAIMED IS:

1. An image generating system, comprising:

a database which stores first shape data which represents a three dimensional shape of a first area including at least a part of an object area;

a camera which shoots a second area including at least a part of the object area; and

an image generating apparatus which generates an image of the object area using a picture shot by the camera and the first shape data, wherein said image generating apparatus includes:

a data acquiring unit which acquires the first shape data from said database;

a picture acquiring unit which acquires the picture from said camera;

a first generating unit which generates an image of the first area by setting a predetermined viewpoint and a view direction and rendering the first shape data;

a second generating unit which generates an image of the second area when viewed from the viewpoint toward the view direction by using the picture; and

a compositing unit which composites the image of the first area with the image of the second area to generate the image of the object area.

2. An image generating system according to claim 1, wherein:

said image generating system includes a plurality of cameras located at a plurality of positions;

said image generating apparatus further comprises a calculating unit which calculates second shape data which represents a three dimensional shape of the second area using a plurality of the pictures acquired from said plurality of cameras;

said second generating unit sets the viewpoint and the view direction and renders the second shape data to generate the image of the second area.

3. An image generating system according to claim 2 wherein said compositing unit generates the image of the object area by complementing an area that is not represented by the second shape data with the image of the first area generated from the first shape data.

4. An image generating system according to claim 2, wherein:

said second generating unit renders the area which is not represented by the second shape data with a transparent color when rendering the second shape data;

said compositing unit generates the image of the object area by overwriting the image of the second area with the image of the first area.

5. An image generating system according to claim 1 wherein said database stores the first shape data obtained by modeling an area which does not change in a short term in the object area.

6. An image generating system according to claim 2 wherein said database stores the first shape data obtained by modeling an area which does not change in a short term in the object area.

7. An image generating system according to claim 3 wherein said database stores the first shape data obtained by modeling an area which does not change in a short term in the object area.

8. An image generating system according to claim 4 wherein said database stores the first shape data obtained by modeling an area which does not change in a short term in the object area.

9. An image generating system according to claim 1, wherein:

said database stores first color data which represents a color of the first area;

said image generating apparatus further includes a lighting calculating unit which calculates a situation of a lighting in the picture shot by comparing the first color data acquired from said database with color data of the picture shot.

10. An image generating system according to claim 2, wherein:

said database stores first color data which represents a color of the first area;

said image generating apparatus further includes a lighting calculating unit which calculates a situation of a lighting in the picture shot by comparing the first color data acquired from said database with color data of the picture shot.

11. An image generating system according to claim 3, wherein:

said database stores first color data which represents a color of the first area;

said image generating apparatus further includes a lighting calculating unit which calculates a situation of a lighting in the picture shot by comparing the first color

data acquired from said database with color data of the picture shot.

12. An image generating system according to claim 4, wherein:

said database stores first color data which represents a color of the first area;

said image generating apparatus further includes a lighting calculating unit which calculates a situation of a lighting in the picture shot by comparing the first color data acquired from said database with color data of the picture shot.

13. An image generating system according to claim 5, wherein:

said database stores first color data which represents a color of the first area;

said image generating apparatus further includes a lighting calculating unit which calculates a situation of a lighting in the picture shot by comparing the first color data acquired from said database with color data of the picture shot.

14. An image generating system according to claim 9 wherein said first generating unit adds an effect of lighting similar to the lighting in the picture shot to the image of

the first area in consideration of the situation of the lighting.

15. An image generating system according to claim 9, wherein:

said first generating unit adds a predetermined effect of lighting to the image of the first area;

said second generating unit adds the predetermined effect of lighting to the image of the second area, after once removing the effect of lighting from the image of the second area.

16. An image generating system according to claim 1, wherein:

said image generating system further comprises a recording apparatus which stores the picture shot,

said database stores a plurality of the first shape data corresponding to the object areas of a plurality of times;

said image generating apparatus further includes:

a first selecting unit which selects the first shape data to be acquired by the data acquiring unit among the plurality of the first shape data stored in said database;

a second selecting unit which selects the picture shot to be acquired by the picture acquiring

unit among the pictures stored in said recording apparatus.

17. an image generating system according to claim 16 wherein said second selecting unit selects the first shape data corresponding to the time when the picture selected by said first selecting unit was shot.

18. An image generating apparatus, comprising:

a data acquiring unit which acquires first shape data which represents a three dimensional shape of a first area including at least one part of an object area from a database which stores the first shape data;

a picture acquiring unit which acquires a picture of a second area including at least one part of the object area shot by a plurality of cameras located at a plurality of positions from the cameras;

a first generating unit which generates an image of the first area by setting a predetermined viewpoint and a view direction and rendering the first shape data;

a second generating unit which generates an image of the second area when viewed from the viewpoint toward the view direction by using the picture shot; and

a compositing unit which composites the image of the first area with the image of the second area to generate the image of the object area.

19. An image generating method, comprising:

acquiring first shape data which represents a three dimensional shape of a first area including at least one part of an object area from a database which stores the first shape data;

acquiring a picture of a second area including at least one part of the object area shot from a plurality of positions;

generating an image of the first area by setting a predetermined viewpoint and a view direction and rendering the first shape data;

generating an image of the second area when viewed from the viewpoint toward the view direction by using the picture shot; and

compositing the image of the first area with the image of the second area to generate the image of the object area.

20. An image generating method, wherein when generating an image of an object area viewed from a predetermined viewpoint toward a predetermined view direction using a plurality of pictures shot by a plurality of cameras and acquired from the cameras in real time, the method generating the image of the object area which represents a present state of the object area artificially by complementing the pictures with an image generated by using



three-dimensional shape data obtained by modeling at least a part of the object area.

21. A program executable by a computer, the program including the functions of:

- acquiring first shape data which represents a three dimensional shape of a first area including at least one part of an object area from a database which stores the first shape data;

- acquiring a picture of a second area including at least one part of the object area shot from a plurality of positions;

- generating an image of the first area by setting a predetermined viewpoint and a view direction and rendering the first shape data;

- generating an image of the second area when seeing from the viewpoint toward the view direction by using the picture shot; and

- compositing the image of the first area with the image of the second area to generate the image of the object area.

22. A computer-readable recording medium which stores a program executable by a computer, the program including the functions of:

- acquiring first shape data which represents a three dimensional shape of a first area including at least one

part of an object area from a database which stores the first shape data;

acquiring a picture of a second area including at least one part of the object area shot from a plurality of positions;

generating an image of the first area by setting a predetermined viewpoint and a view direction and rendering the first shape data;

generating an image of the second area when seeing from the viewpoint toward the view direction by using the picture shot; and

compositing the image of the first area with the image of the second area to generate the image of the object area.